Remarks

Claims 1-23 are pending. Claims 1, 22, and 23 are in independent form.

Claim 4 has been amended for consistency with terminology used in other claims. Claim 14 has been amended for clarity.

Objections to Claims

In response to the objection to claims 5 and 6, claim 6 has been amended to include the subject matter of claim 4. It is submitted that the dependency of claims 4, 5, and 6 is now clear.

Claim Rejections - 35 U.S.C. 102

Claims 1-3, 5-9, and 20-23 have been rejected under 35 U.S.C. 102 (b) as anticipated by Chen (US 2005/0027371).

It is submitted that claim 1 as amended is novel and inventive in light of Chen.

First, Chen does not disclose "an apparatus for attaching a prosthetic limb to the *bone* of a patient...comprising a proximal component to mount to a *bone implant*". Chen discloses an artificial limb having an upper limb part 2 and lower limb part 3. There is no disclosure in Chen that the upper limb part is for mounting to a bone implant as recited by claim 1.

Second, Chen does not disclose "a coupling body coupling together the proximal and distal components" such that they only have "freedom to articulate when, in use, at least one of a bending and torsional force is applied to the prosthetic limb" which "exceeds a threshold safe level whereby the force may be accommodated by...articulation within the attachment apparatus", as recited by claim 1. By contrast, Chen discloses simply that the relative position of the upper and lower limb parts can be adjusted (see paragraph 0002 and the end of paragraph 0006).

The apparatus of Chen has a locking member 13, which when screwed tight prevents relative movement of the upper and lower connecting pieces 11 and 12. Upper connecting piece 11 is rigidly attached to the upper limb part 2 by lock bolts 24. In order to permit relative movement of the upper and lower connecting pieces in a transverse direction, the locking member 13 must be loosened (see paragraphs 0018 and 0019).

Chen does not disclose or suggest that proximal and distal components of the apparatus should be coupled by a coupling which articulates only when at least one of a bending and torsional force applied to the prosthetic limb exceeds a threshold safe level. Instead, the upper and lower connecting pieces 11 and 12 of Chen can only be moved relative to one another when the locking member 13 is manually loosened.

The Examiner has not given his reasoning as to which particular features of Chen disclose all of the recited features of claim 1. If his contention is that a manual torsional force applied to the locking member 13 allows relative movement of the upper and lower parts, then Applicants submit that this does not disclose all the features of claim 1. First, the torsional force on the locking member (screw) is not "accommodated by articulation within the attachment apparatus", that is, the limb does not articulate to accommodate the torsional force. The upper and lower connecting pieces 11 and 12 do not move relative to one another until a separate transverse, manual force is applied to one of them. Neither the manual torsional force on the screw or the manual transverse force are applied to the limb by its use as required by claim 1. Moreover, there is no disclosure that the proximal and distal components would move relative to one another when a force "exceeds a threshold safe level" as required by the claim. Chen simply teaches unscrewing the connecting pieces from each other and adjusting them.

Finally and importantly, claim 1 has been amended to recite "the force may be accommodated by at least one of bending and rotational articulation within the attachment apparatus". Chen makes no showing or suggestion of either bending or rotational articulation, even during the disclosed manual adjustment when the limb is not being used. By contrast, Applicants have conceived and claimed effective mechanisms for dealing with these forces, so as to solve a significant problem.

The remarks addressed to claim 1 are equally applicable to claim 22. In addition, claim 22 recites "an automatically disengageable connector that couples together the proximal and distal components ...in a fixed angle relation...in normal use, but with freedom to articulate away from the fixed angle relation when, in use, a bending force is applied to the prosthetic limb only when the force exceeds a threshold level." Chen discloses only a transverse adjustment and does not teach or suggest dealing with an angle relationship between the proximal and distal components. Moreover, there is no hint anywhere in Chen of automatic disengagement.

The remarks about claim 1 are also applicable to claim 23. In addition, claim 23 recites "a clutch-like mechanism to rotationally couple the prosthetic limb to the bone implant in use but which automatically disengages, rotationally decoupling the prosthetic limb from the bone implant, when torque applied to the prosthetic limb exceeds a predetermined threshold and wherein the apparatus has adjustment means whereby the threshold level of torque on the prosthetic limb that will cause disengagement of the clutch-like mechanism may be increased or decreased". Chen does not show or suggest rotational coupling or dealing with torque; instead, Chen discloses only a transverse adjustment. Moreover, given that Chen has nothing to do with automatic disengagement, it makes no teaching or suggestion about adjusting a threshold level of torque for automatic disengagement.

The teachings of Chen are clear that when the limb is being used for walking, the upper and lower connecting pieces are not to move at all with respect to each other, but to remain fixed, no matter what forces are applied. Of course, this is the situation that the present inventors have envisioned has the potential for injury and that could be greatly improved upon, and they have conceived of a structure for making the improvement.

The purpose of Chen is to have upper and lower limb parts which are fixed with respect to each other during walking, but which can be adjusted when not in use so that the amputee can maintain balance during resumption of walking (see the end of paragraph 0004 and paragraph 0005). Chen does not relate to and does not provide any teaching towards the objective of the present invention, which is to provide a transcutaneous bone implant patient with adequate protection against bone stump damage or tearing of flesh should excessive bending or torsional forces be applied to the prosthesis.

For the reasons given above, it is submitted that independent claims 1, 22 and 23 are neither anticipated by Chen, nor obvious in view of Chen. Claims 2, 3, 5-9, and 20-21, dependent on claim 1, are submitted to be patentable for the reasons given in connection with claim 1.

Claim Rejections - 35 U.S.C. 103

Claims 4 and 10-19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Capper et al (US 6,605,118) hereinafter "Capper". It is submitted that Chan and Capper do not show or suggest the features of claims 4 and 10-19.

The operation of the clutch in Capper is to prevent a locking gear 86 from rotation, thereby locking down a lock pin 60 of a prosthetic attachment locking assembly. The locking gear 86 is held in an axial locking position by a spring. When it is desired to remove the prosthetic, the gear 86 is pushed away from the locking position, so that the locking pin 60 is free to be removed axially.

Claim 4 is dependent on claim 3, which recites "a clutch-like mechanism to rotationally couple the prosthetic limb to the bone implant". Among other differences, the Capper apparatus is for longitudinal coupling. Claim 4 recites "the clutch-like mechanism is resiliently biased to the rotationally coupled state and whereof the biasing force applied to the clutch-like mechanism by the resilient biasing means in use determines the threshold level of torque on the prosthetic limb that will cause disengagement of the clutch-like mechanism". Since Capper does not deal with rotational coupling of the limb, its spring does not bias the clutch to a rotational state of the limb, nor does it determine any level of torque on the prosthetic that will cause disengagement. In Capper, there is no disclosure or suggestion of torque on the limb; a button is pushed to disengage from the connector pin and the prosthetic is removed longitudinally.

Claim 10 recites "the biasing force applied to the disengageable connector by the resilient biasing means in use determines the threshold level of bending force on the prosthetic limb that will cause disengagement of the disengageable connector". Capper makes no disclosure or suggestion of a bending force on the limb that will cause disengagement of the connector. In Capper, a button is pushed to disengage from the connector pin and the prosthetic is removed longitudinally.

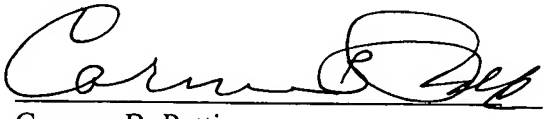
Chen makes no teaching which supplements the deficiencies of Capper, since Chen deals with a manual transverse adjustment, not rotational or bending. Accordingly, it is submitted that claims 4 and 10 are not obvious in light of Chen and Capper. Claims 11-14 are considered patentable for the reasons given in connection with claim 10 from which they depend.

Claim 15 is dependent on claim 9, which recites "the proximal and distal components ...in a fixed angle relation to the other ...in normal use, but with freedom to articulate away from the fixed angle relation when, in use, a bending force is applied to the prosthetic limb only when the force exceeds a threshold level." As stated above, neither Chen nor Capper make any teaching or suggestion regarding fixed angle relation, bending, or bending force. Thus, it is submitted that claim 15, and claims 16-19 dependent thereon, are not obvious in light of Chen and Capper.

Conclusion

In view of the above amendments and remarks, allowance of all pending claims is respectfully requested. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call Applicants' attorney.

Respectfully submitted,



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Dated: April 8, 2009

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